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COW-TESTING ASSOCIATIONS AND STORIES THE RECORDS TELL



FIRST-CLASS, profitable dairy farms are almost always found in groups. The center of each group is some farm, some man, some idea.

The 732 cow-testing associations now active in the United States are that many groups of improved dairy farms.

In nearly every case the association depends upon the activity of a few progressive farmers, and centers around the idea that every dairyman should know the individual records of his cows. Every dairyman needs to know what each cow is producing if he is to manage and develop his herd profitably. This knowledge can be obtained through cow-testing association records.

The purpose of this bulletin is to show the need and value of cow-testing associations, to present briefly some of the outstanding results obtained from a tabulation of cow-testing association data, and to show how such associations may be organized and conducted.

COW-TESTING ASSOCIATIONS, AND STORIES THE RECORDS TELL

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LIKE A SEARCHLIGHT, the cow-testing association pierces the dense darkness that prevails so generally regarding the records of our dairy cows. In this penetrating and revealing light, production and feed-cost records stand out clearly. Only the scrub cow whose milk or butterfat production is scant need fear the light. Well may that cow dread the truth as told by the milk scales and the Babcock test, because when her record becomes known her doom is sealed and she must depart forever from the herd.

Far different is the fate of the large producer. She has no cause to fear the light. Through the work of the cow-testing association her high record stands out as it actually is, her true value becomes known, and in the dairy herd she takes her proper place. From that time on, if she is fed according to production, she will produce milk more and more abundantly. As the years roll around she may become the mother of a strain of high producers and persistent milkers, and unlike her distant relative, the scrub, she may remain for many years an honored member of the dairy herd—honored because profitable.

METHODS OF WORK

As ordinarily conducted in this country, a cow-testing association is an organization of about 26 dairy farmers, who cooperatively employ a tester to keep production, feed, and income records of their dairy cows.¹ Knowing the actual records of his cows, the dairyman can with certainty eliminate those that are unprofitable, and feed the remainder according to known production.

The most useful cow-testing association also compares the records of dams and daughters, promotes the ownership of better sires, encourages the use of proved sires, and shows the advantage of feeding satisfactory rations. This is a big program, but it is not too big for the well-organized and well-managed cow-testing association.

¹ A "Cow-tester's Handbook," Miscellaneous Circular 26, United States Department of Agriculture, giving details regarding the tester's work, may be obtained on application to the department. For information regarding the Babcock test, see bulletins published by the State agricultural colleges and the United States Department of Agriculture.

ACCURACY OF COW-TESTING ASSOCIATION METHOD

In the cow-testing association work the milk is ordinarily weighed and tested one day each month, and the monthly production is determined by multiplying the daily production by the number of days in the testing period. (Fig. 1.)

To determine the accuracy of the cow-testing association method of calculating production, the United States Department of Agriculture has compared the results of this method with actual yearly records, using 70 yearly individual-cow records of the Minnesota Experiment Station. These Minnesota records gave the production of milk and butterfat for each milking throughout the year. By systematically picking out the weights and tests for one day each month, as they would have been obtained by the cow-testing association method, and thus calculating the yearly production, it was found

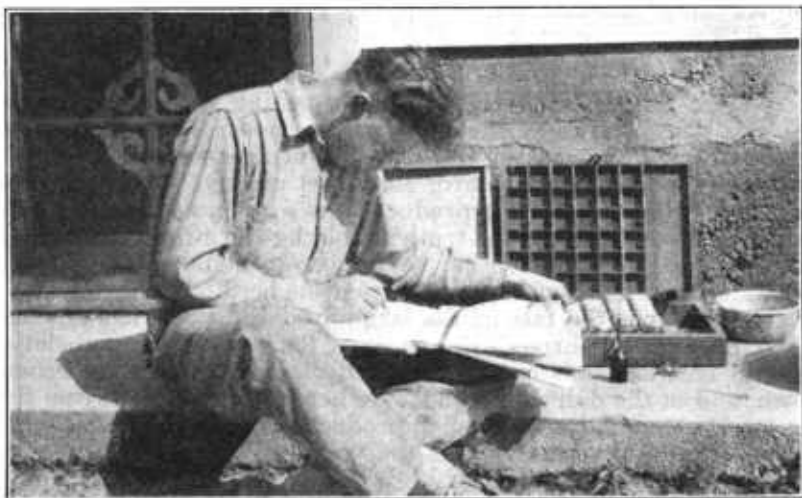


FIG. 1.—The milk is tested once a month and the results recorded

that the association method was accurate within 2 per cent on milk production and within 3 per cent on production of butterfat.

A tabulation has also been made of 100 yearly individual-cow records from the department farm at Beltsville, Md. These records gave only the milk production night and morning for every day in the year. A yearly total calculated from one day's record each month, when compared with the actual milk production, showed an accuracy within 1.99 per cent. These comparisons indicate that the method used in cow-testing association work gives a very accurate record of production.

INCREASE IN NUMBER OF COW-TESTING ASSOCIATIONS

The first cow-testing association in the United States was organized in Newaygo County, Mich., in 1905, and the testing work was begun in January, 1906. Since then, with the exception of the two years, 1918 and 1921, there has been a rapid and fairly constant growth in the number of cow-testing associations. Table 1 shows

the number of associations on July 1 of each year from 1906 to 1923, inclusive, and on January 1, 1925. Figure 2 shows graphically how the number of these associations has increased during those years.

TABLE 1.—Number of cow-testing associations, 1906 to 1925, inclusive

Year	Associa- tions	Year	Associa- tions	Year	Associa- tions
1906.....	1	1913.....	100	1919.....	385
1907.....	4	1914.....	163	1920.....	468
1908.....	6	1915.....	211	1921.....	452
1909.....	25	1916.....	346	1922.....	513
1910.....	40	1917.....	459	1923.....	627
1911.....	64	1918.....	353	1925.....	732
1912.....	82				

The decline in cow-testing work in 1918 and again in 1921 was due largely to a shortage of trained testers. The number of associations in active operation January 1, 1925, was 105 more than on July 1, 1923. The map (fig. 3) shows that they are widely distributed throughout the United States.

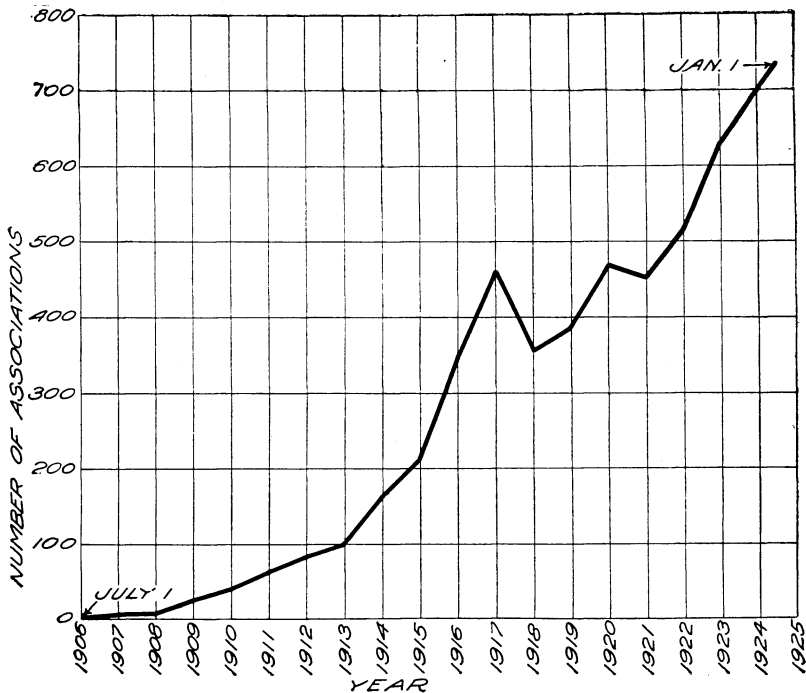


FIG. 2.—How cow-testing associations have grown in numbers year by year

On January 1, 1925, there were 18,677 members in these associations, having 307,073 cows on test. As there are approximately 25,000,000 dairy cows in the United States, the number of cows now on test in cow-testing associations is a little more than 1 per cent of the total.

But what of the 99 per cent whose records are unknown? The man who does not know what each of his dairy cows is producing from a dollar's worth of feed is usually not in a profitable business. A man's progress in the dairy business is usually in direct proportion to his knowledge of the business. If testing pays, and it most certainly does, the work should be extended until many more than 1 per cent of our dairy cows are placed on yearly test.

RESULTS OF COW-TESTING ASSOCIATIONS

FIVE YEARS OF PROGRESS

In a well-managed cow-testing association the gain in average production per cow is quite rapid during the first four or five years of association work. In the case of three particular associations—one in Michigan, one in Ohio, and one in Pennsylvania—the average production of butterfat per cow during the first five years of testing showed a gain each year in each association. For the three associations when averages were combined, the yearly butterfat production per cow was as follows: First year, 237 pounds; second year, 255 pounds; third year, 278 pounds; fourth year, 292 pounds; and fifth year, 305 pounds.

What the average butterfat production was during the year before the work began there is no means of knowing, but in many of the herds it probably was about the average production for all the dairy cows in the United States, which is estimated to be about 170 pounds a year. Therefore it seems reasonable to conclude that the cow-testing association work has practically doubled the average production of butterfat per cow in these three associations. The figures just given are normal for the well-managed cow-testing association, but there are many associations where the gains from year to year are not so great.

Every cow-testing association member should watch the production figures of his cows, and he should not be satisfied unless there is a rapid gain in average milk and butterfat production every year until the herd reaches a high level of production. Even then he should not be satisfied with less than at least a small gain in production per cow from year to year.

HELPS BOTH HIGH AND LOW PRODUCING HERDS

The cow-testing association work helps both low and high producing herds. When the first Minnesota cow-testing association was started near Albert Lea in 1910 the lowest-producing herd on test consisted of 30 cows whose average production was 2,958 pounds of milk and 112 pounds of butterfat. That year the butterfat did not pay the cost of feed. Four years later there were 20 cows in the same herd; their average production was 4,759 pounds of milk and 228 pounds of butterfat, and the average income over cost of feed was \$50. In four years' time the average butterfat production per cow in that herd was more than doubled, resulting in a substantial income over cost of feed.

The first year the highest-producing herd in that association consisted of 22 cows whose average production was 9,390 pounds of milk

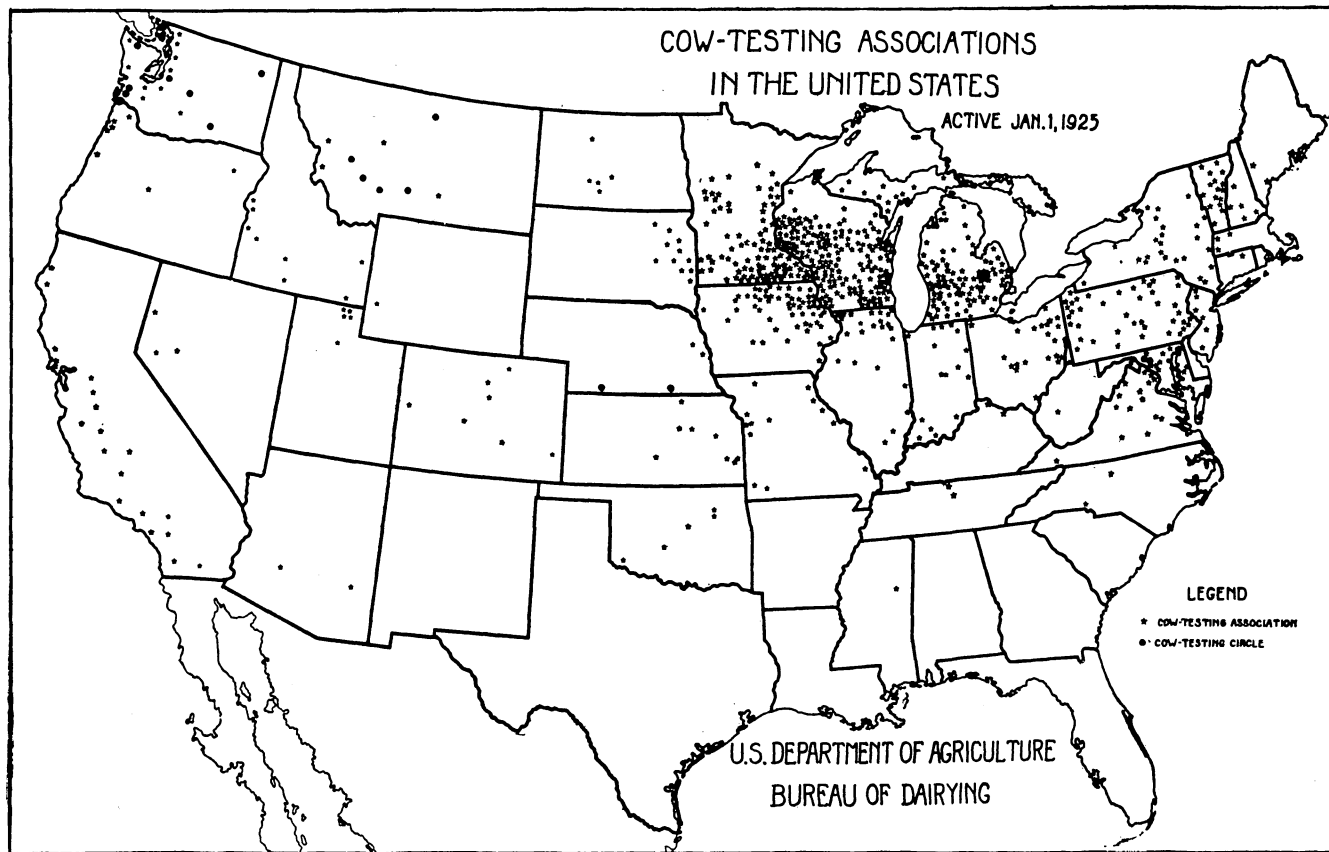


FIG. 3.—Location of cow-testing associations

and 311 pounds of butterfat, and the average income over cost of feed was \$52. Four years later the same herd consisted of 25 cows whose average production was 11,948 pounds of milk and 400 pounds of butterfat, and the average income over cost of feed was \$98. Here is a gain in yearly production of butterfat per cow of more than 28 per cent, and the income over cost of feed was almost doubled.



FIG. 4.—Their records tell a pleasing story

These figures show that the work of the cow-testing association improves high-producing herds as well as those of lower quality. In both cases the results were brought about through selection and breeding, better feeding, better care, and better management.

SELLING COWS ON THEIR RECORDS

Reliable production records help in the sale of good stock. Buyers usually want to know how much milk a cow gives. The cow-testing association records not only tell this, but they show her butterfat production and the amount of feed she ate while making the record. Anyone would pay more for an animal whose yearly production record shows 10,000 pounds of milk and 450 pounds of butterfat than if nothing definite were known about her.

At public sales cow-testing association records have sometimes greatly raised the prices received for cows. Association sales may be arranged in some cases to advantage. When a sale can be arranged among a number of neighboring farmers it is possible to attract more buyers and thus obtain for the cattle what they are actually worth. Such a sale has an advantage to the buyer also, because he knows where to find the stock that is for sale and does not have to spend time and money driving from farm to farm looking for it.

The cow-testing association records may be used to advertise the dairy herds of the community. Each month the tester may publish

an honor list composed of the largest-producing cows. This list, together with the names of the owners, may be published in the local papers and in the farm journals. Further publicity may be obtained at reasonable cost through the use of cooperative advertisements.

HOW FARMERS REGARD THE WORK

One farmer says that at the beginning of his first year in a cow-testing association he knew he was making no money, but he did not know why. He says that at the end of the testing year he still knew he was making no money, but by that time he knew why. He is now the owner of a high-producing and profitable dairy herd.



FIG. 5.—Scrub herd. This herd is unprofitable—and does the owner know why?

When another farmer joined a cow-testing association he was the owner of 14 cows. The first year's records showed that 7 of his cows were very profitable and that 7 were decidedly unprofitable. This farmer says that his herd reminded him of the Hebrew-Egyptian story of the 7 fat years and the 7 lean years, for as the 7 lean years ate up the 7 fat years, so his 7 poor cows ate up the profits the 7 good cows made. When that farmer signed up for a second year in the cow-testing association he was the owner of a smaller but better herd.

The following quotations are from what farmers have said regarding cow-testing association work:

The first year I belonged to the association my herd of 10 cows produced an average of 279 pounds of butterfat, with an average income over cost of feed of \$37. The fifth year my herd, which then consisted of 17 cows, produced an average of 380 pounds of butterfat with an average income over cost of feed of \$82.

The work of the cow-testing association has increased the cream checks about \$250 a year on my 12 cows.

It is the best-paying investment I ever made.

By doing away with guesswork one can triple his profits and lessen his labor.

The association culls the boarder cows and advertises the good ones.

I found that my best cows were producing butterfat at a third the cost of the poorest one.

I offered to sell a cow for \$75 before testing. She made 495 pounds of butterfat. I would not sell her now.

The cow-testing association has added at least \$25 a head to all the cattle I have sold.

The association has greatly improved the social life of the community.

What a change since the association was organized. Now we cooperate in buying feed, in hauling cream, and in holding public sales of tested cows. Every member grows alfalfa, keeps a purebred dairy sire, and raises the best of the heifer calves.

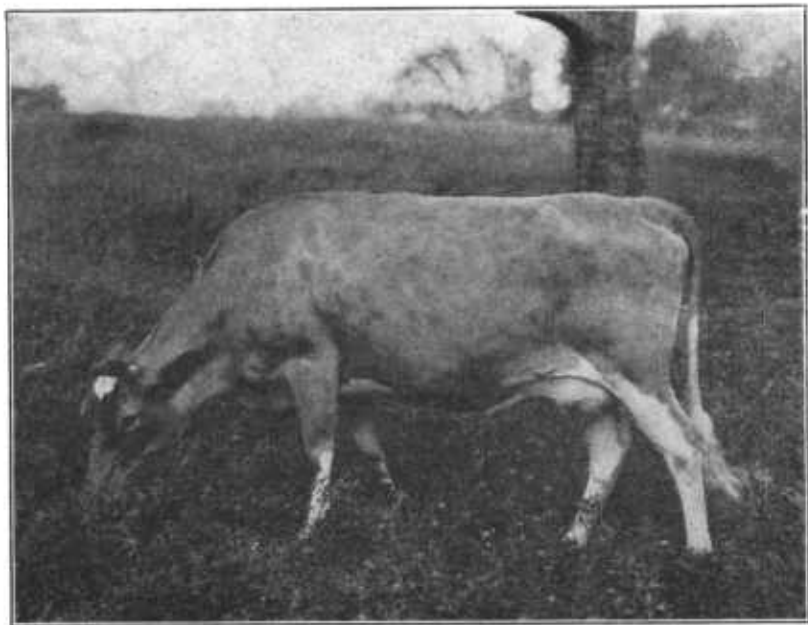


FIG. 6.—She foraged on the very best of pastures

A VIRGINIA EXPERIENCE

Seven years ago a certain Virginia farmer was a member of a cow-testing association. He was the owner of 91 cows, and during that year he discovered that many of them were naturally very low producers. To make matters worse, careless hired men dished up the grain with a scoop shovel and fed all the cows alike regardless of production. As might be expected under those circumstances, production was low, feed cost was high, and income was low.

Each year since then the cow-testing association work has improved that herd, which has been reduced from 91 cows to 54. Milk production has advanced from 3,311 pounds per cow to 5,953. Butterfat production has advanced from 155 pounds per cow to 280. But most marvelous of all, the income over cost of feed has jumped from 64 cents to \$146.07 per cow per year—more than 200 times as

much. This increase in income over feed cost was due to better cows, better feeding, and to better marketing of the product.

Last year the average cow in the herd produced more income over cost of feed than was produced by the 91 cows seven years ago. In fact it would require 228 cows like those in the original herd to produce as much income over cost of feed as is produced by the average cow in that same herd to-day. Needless to say, the owner is a firm believer in the work of the well-managed cow-testing association. (See fig. 4.)

HOW MOLLY'S LIFE WAS SAVED

A grade Guernsey cow named Molly lived on a beautiful dairy farm near the city of Baltimore. She

drank pure fresh water from a sparkling upland stream, and all summer she foraged on the very best of pastures. (Fig. 6.) She did not know that her owner was ignorant of the quality of the milk she gave, nor that he thought the quantity rather small. She did not



FIG. 8.—Her owner joined a cow-testing association



FIG. 7.—Her owner telephoned to a cattle dealer

know that he had telephoned to a cattle dealer telling him to come and get a certain cow named Molly. (Fig. 7.)

The dealer agreed, but delayed his coming. About that time the county agent and the dairy extension field man induced Molly's owner to join a cow-testing association (fig. 8), and one day the tester weighed and tested Molly's milk. (Fig. 9.) The test showed 5.5 per cent butterfat and the tester advised that Molly be kept a little longer, because her milk more than made up in quality for what it lacked in quantity.

Before that testing year had run its course Molly had proved herself a high tester and persistent milker. Her daily yield was never large, but the total for the year was 5,967 pounds of milk, containing 330 pounds of butterfat. In production of butterfat Molly ranks among the highest in that herd.

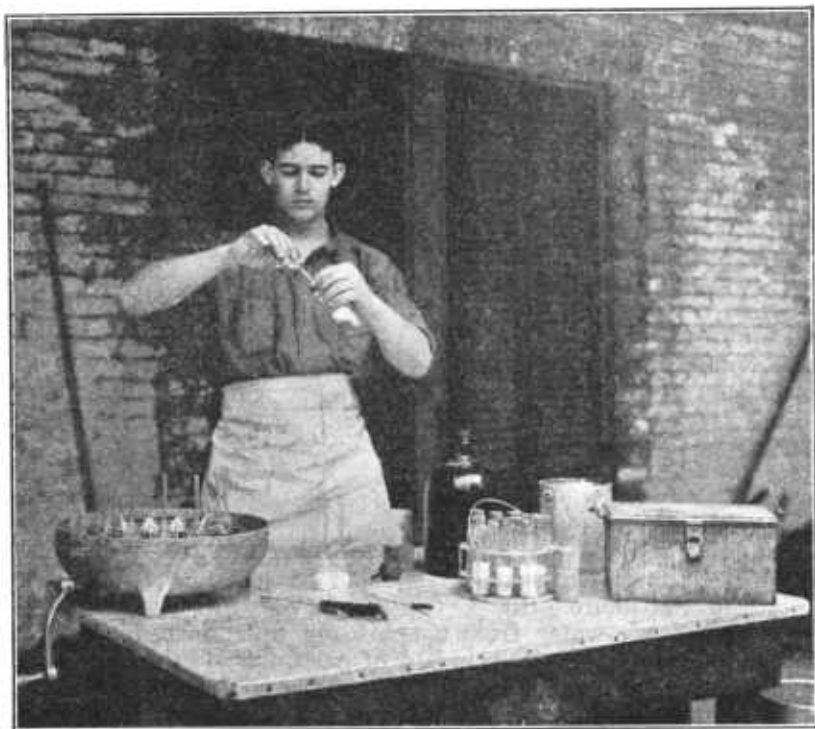


FIG. 9.—Testing Molly's milk

WHAT COW-TESTING ASSOCIATION RECORDS REVEAL

BETTER COWS NEEDED

In most sections of this country we have enough cows, but not good enough cows. Our slogan should not be "More Cows" but "More *Good* Cows." Here is one place where there is an abundance of room at the top.

In the Newaygo County, Mich., cow-testing association the herd that one year had the highest average production of butterfat per cow consisted of 10 cows and the herd that had the lowest average production consisted of 20 cows. The herd of 10 cows had a total income over cost of feed of \$666 and the herd of 20 cows \$455. The owner of the larger herd needed 9 more cows of the kind he was keeping to get as much income over cost of feed as was produced by the smaller herd.

It is better, however, to own 10 good cows than 29 poor ones. It demands less labor and other costs. To build up a herd of 10 good cows (fig. 10) requires much headwork. To take care of a herd of 29 poor cows requires much handwork. The dairyman who does not use his head must work that much harder with his hands.

FEEDING FOR PROFIT

A tabulation of more than 21,000 yearly records of cow-testing association cows has shown that on an average the high producers of

milk and butterfat consumed more dollars' worth of feed per cow than the low producers, but they also yielded a higher income over cost of feed.

In one association the herd that ate next to the least in dollars' worth of feed per cow produced on an average the least milk and the least butterfat, and paid the lowest gross income per cow and the lowest average income over cost of feed. In that association the herd that ate the most in dollars' worth of feed per cow produced the most milk and the most butterfat on an average, and paid the largest gross income per cow and the largest average income over cost of feed. In every large tabulation which the writer has made, the group of highest-producing cows ate the most in dollars' worth of feed per cow, but they produced the most milk and butterfat and had the largest average income over cost of feed. Evidently it pays to feed good cows well.



FIG. 10.—To build up such a herd requires testing, not guess work

The dairy cow may be considered as a feed market. The low-producing cow pays a low price for feed and the high-producing cow pays a high price for feed. A tabulation of more than 21,000 yearly individual-cow records showed an average return of \$2.13 for every dollar spent for feed. The returns varied from less than \$1 to a little more than \$3. The cow that returns a dollar for a dollar's worth of feed is a very poor feed market, but the cow that returns \$3 for \$1 worth of feed is a very good feed market. The cow-testing association herd book, completely filled out and posted up to date, is one of the best feed-market reports the dairyman can have. It tells him how many dollars' worth of feed Spot, Daisy, and the rest of his cows are eating, also how much each cow is paying for her feed.

GOING UP OR COMING DOWN

The cow-testing association records show that some herds improve from year to year and that others do not. This was demonstrated in the case of two herds that were on test continuously during the first four years in one association. The results are shown in Table 2.

TABLE 2.—Average butterfat production per cow per year in two herds of the same association

	Herd A	Herd B
First year.....	377	234
Second year.....	350	244
Third year.....	321	302
Fourth year.....	313	315

When the work began herd A excelled herd B in butterfat production by a margin of 143 pounds per cow. In each successive year herd A went down and herd B went up in yield per cow, until the fourth year, when herd B produced a trifle more butterfat per cow than herd A.

These figures show that membership in a cow-testing association helps but little unless the lessons are put into practice. The owner of herd A should find out why the average butterfat production in his herd is gradually coming down, and he should find some means to face his herd the other way. The owner of herd B is doing very well. The average production of his herd is going up, because he is weeding out the poor cows, and feeding the remaining ones better. He should do his best year by year to push the average still higher. No dairy herd has ever dropped so low that culling, feeding, and breeding could not build it up, and no herd is yet so high that these three factors can not lift it higher. The cow-testing association records tell the true story and show whether the records are going up or down.

A DAIRY DEAD LINE

The question is often asked: When should a dairy cow be condemned because of low production? That is an easy question to ask, but not so easy to answer.

According to estimates of the United States Department of Agriculture, the average yearly production of our dairy cows in 1923 was 4,260 pounds of milk. Certainly no one will contend that a mature cow whose production is below that level should long be kept on a dairy farm. A tabulation of more than 21,000 yearly records of cow-testing association cows has shown an average yearly production of 6,077 pounds of milk and 248 pounds of butterfat per cow. Many dairymen feel that a level of 6,000 pounds of milk and 240 pounds of butterfat per cow per year should be required of every mature cow in the herd.

Many a good cow has lost her life because her owner did not know what she produced. Many a good cow's life is still in danger because her owner does not keep production and feed cost records of his cows. It is easy to place the dead line at 6,000 pounds of milk and 240 pounds of butterfat a year, but it is not so easy to bring the record of every mature cow above that line. Culling, alone, will not do it without too much killing. Culling and feeding, together, will not do it without too much killing and too much cost. But culling, feeding, and breeding, all combined, will do it, and do it at a cost that ordinarily will leave a fair net profit.

DRY TOO MUCH OF THE TIME

In a Mississippi cow-testing association, during the testing year 1921-22, one cow produced milk 7 months, with a butterfat production of 79 pounds and an income of \$7 over cost of feed. Another cow produced milk 11 months, made a butterfat record of 313 pounds, and an income over cost of feed of \$64. In dollars' worth of feed the higher producer ate more than twice as much as the other cow, but she produced four times as much butterfat and nine times as much income over cost of feed. The good cow was a persistent high producer; the other was a very low producer. Even during the period when she was fresh she was a low producer, and she was dry too long.

A tabulation of more than 10,000 yearly individual-cow records from testing associations showed that on an average those cows remained in the herd 4.7 years from the time they reached production age. Similar studies of records by the Office of Farm Management of the United States Department of Agriculture,² and by C. W. Larson³ gave 4.43 years and 4.85 years, respectively. Figures from these and other sources indicate that on an average dairy cows remain in the herd less than 5 years from the time they reach production age. If that is true, the average dairy cow has already lived about one-third of her life before she directly pays a single dollar for her stable room and board. In other words, she lives $2\frac{1}{2}$ years out of $7\frac{1}{2}$ before she produces any dairy products. If during her 5 productive years she is dry 3 months in every 12, she is dry $1\frac{1}{4}$ years of the 5. Two and one-half plus one and one-fourth equal three and three-fourths, exactly one-half of the entire lifetime of the cow.



FIG. 11.—A scrub cow. Her owner is patient. The cow-testing association shows how unprofitable she is

If our dairy cows freshened once a year on an average, which at present they do not, and if each were a persistent high producer, their productive lifetime in the herd might be 10 years instead of 5 and their income over cost of feed during all the years would be several times what it is now.

A high-producing cow begins to yield a profit at the age of 2 or 3 years. When she is 6 and 7 years of age the profits from her are very high and she may continue to yield a profit until very late in life. (Fig. 12.)

The lifetime records of a low-producing cow may be likened to the daily course of the winter's sun, which rises late, remains low, lasts only a little while, then disappears. The lifetime record of a high-producing cow may be likened to the daily course of the summer's sun, which rises early, climbs to a great height, remains long, descends slowly, and seems reluctant to disappear.

² Department Bulletin 341, United States Department of Agriculture, Farm Management Practice of Chester County, Pa., p. 95.

³ Milk Production Cost Accounts, Principles and Methods. Columbia University Press, 1916.

WHEN COWS SHOULD FRESHEN

A tabulation of 10,870 yearly records of cow-testing association cows showed that those cows which freshened in the fall and early winter did better in production of milk and butterfat and in income over cost of feed than those which freshened in the spring and

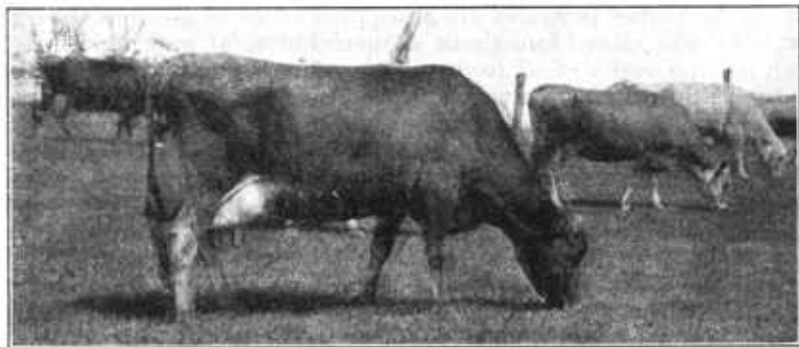


FIG. 12.—Her record is as persistent as the summer's sun

summer. Those that freshened in the fall and winter produced 11 per cent more milk, 11 per cent more butterfat, and 11 per cent more income over cost of feed than those that freshened in the spring and summer.

While fall and winter freshening won on an average, they did not win on every farm or in every association. The influence of date of freshening appears to be a local problem for which no set rule can be given.

COW-TESTING MEASURES BULL-ASSOCIATION WORK

The cow-testing association records determine the true value of bull associations. In the vicinity of Grove City, Pa., there are two

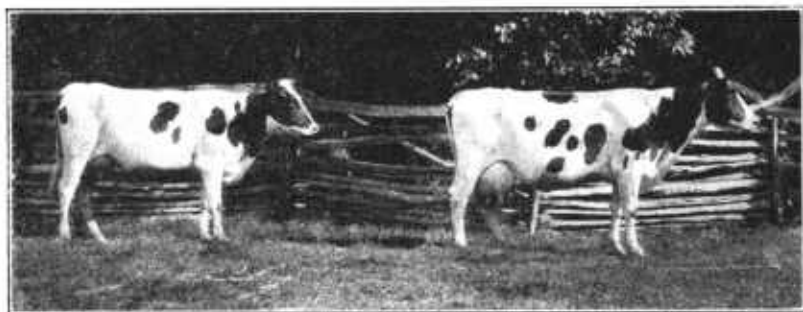


FIG. 13.—Following in the footsteps of her mother

bull associations and one cow-testing association. From that district we now have the yearly records of daughters of bull-association bulls and the yearly record of the dam of each daughter.

When all records were figured to maturity, it was found that on an average the dams produced 8,785 pounds of milk a year and the daughters 9,212 pounds. The dams averaged 355 pounds of

butterfat a year and the daughters 394 pounds. Thus the daughters produced about 5 per cent more milk and about 11 per cent more butterfat than their dams. That percentage of gain seems small until we realize that the daughters were matched against no ordinary dams. The figures further showed that the daughters were by six bulls, and that in no case did the daughters bring discredit to their sire.

What would have happened if the 18 daughters had been sired by scrub bulls or by inferior purebred bulls is not hard to guess. The fact, learned from cow-testing association figures, that the daughters of these bulls surpass their high-producing dams by 5 to 11 per cent proves conclusively that the bull association is a great success.

HOW TO START AND CONDUCT AN ASSOCIATION

STARTING THE ORGANIZATION

After a community has become convinced of the need of having a cow-testing association, the next step is to organize. A meeting may be called and a temporary organization effected. The neighborhood is thoroughly canvassed until about 26 dairymen have agreed to become members. Another meeting is then called and a permanent organization formed. Officers are elected and a constitution and by-laws adopted.

The best experience shows that this work should be done under the direction of the dairy extension specialist and the county agent, and with the full cooperation of all local agencies.

In this bulletin is a draft of constitution and by-laws. These indicate a form of organization that will give satisfaction and meet the needs of most associations. Whatever adaptations are necessary to fit them to local needs and desires can readily be made.

The county agent, the State agricultural college, or the Bureau of Dairying of the United States Department of Agriculture, will on application furnish copies of the constitution and by-laws, also copies of the form to be used in making a contract between the association and the tester.

COST

Enough money must be raised each year to pay the tester's salary, which is usually somewhere between \$75 and \$100 per month, and to provide for the incidental expenses connected with the work. The testing outfit, costing about \$50 must be purchased the first year. An additional \$50 should pay for the sulphuric acid, breakage, record blanks, publicity, and all other incidental expenses necessary for the work for a year. The entire cost, including the board of the tester and his transportation from farm to farm, is not high for each member of the association. Generally the cost is distributed so that the owners of large herds pay more than the owners of small herds.

TESTING OUTFIT

The testing outfit consists of the following: Milk scales, Babcock tester and glassware, sample jars, sample dipper, test-bottle bath,

drainage rack, supply of commercial sulphuric acid (specific gravity of 1.83), a set of computing tables, a suitable box with lock to hold the apparatus and to keep milk samples until they are tested.

SELECTING A TESTER

As a rule the members of the association must rely largely on the State agricultural college when it comes to the selection of a competent tester.

The tester should have some special training in testing in addition to farm experience. The more he actually knows about selection, feeding, and constructive breeding of dairy cattle, the greater will be the value of his services to the association. It is essential that he be a man of good habits, and neat and clean in every way. He must be the type of man that will be welcome in the homes of the community, because it is in these homes that he must live while working there.

The farmers, however, must not expect too much of the cow tester. He is there primarily to weigh and test the milk, to weigh the feed, and to keep complete and accurate records of the work. He may also advise the members of the association regarding the feed and care of each cow in the herd. He can not work miracles. He can not by any method of feeding get a yearly butterfat production of 300 pounds from the cow with ability to produce only 100 pounds.

WORKING WITH THE TESTER

The tester can be of great service if all the members of the association will work with him toward the building up of better herds of dairy cattle. The wide-awake tester is a willing worker. He begins his day in the early morning and continues until the milking is done at night and the samples are all put away under lock and key. He weighs the feed, weighs and tests the milk, and keeps the records constantly up to date. He is ready at all times to interpret the figures to the best of his ability and to work with the farmers in studying out better methods of feeding, care, and management. To do all this and do it well, he must have the cooperation of the farmers in the association.

THE TESTER'S WORK

The tester visits each farm one day each month. Usually he arrives in the afternoon. That evening he weighs the feed, weighs the milk, and takes a sample of the milk for testing. He records all figures in the barn book, from which he transfers them to the herd book. The barn book is the tester's record of the work, and the herd book remains in the possession of the farmer as his record of the work. The next morning the tester again weighs the feed, weighs the milk, and takes a sample of the milk for testing. He thoroughly mixes the two samples of each cow's milk, and then tests the composite sample for percentage of butterfat.

From the herd book the farmer can at any time get the record of his herd, and of each cow, for each month from the beginning of the testing year to date. He can also get totals to date for each and every cow. The herd records include feed cost and production of

milk and butterfat. The individual-cow records include all this and in addition they give the feed in pounds for each kind consumed.

At the end of the testing year the farmer can get from the herd book the yearly summary of his herd and of each cow. As the years pass he can compare the yearly records and determine what progress his herd is making and what progress each individual cow is making. If the herd books are carefully and completely filled out, the farmer can get all this information very quickly and from this knowledge of the records of his cows he can go forward, without guesswork, in the improvement of his herd. With a well-kept herd book the farmer is able to build up his herd quickly through intelligent selection, breeding, and feeding.

HOW TO OBTAIN COMPLETE RECORDS

The question is sometimes asked: How can testers be induced to fill out the records accurately and completely at the end of the testing year? It has been found in practice that it is not advisable to hold back part of the tester's salary until he turns in his records properly filled out, as that is a penalty which antagonizes the tester and results in hard feelings to no purpose. A better way is to offer the tester a bonus to be paid when he does fill out the records in proper form. He will work harder to obtain a bonus than to avoid a penalty. With the offer of a substantial bonus for the satisfactory completion of the year's work by the tester, it is believed that every tester will be induced to turn over to the State and to the United States records of the highest value, and that by so doing each tester will better serve the interests of the farmers who belong to the local association.

MILKING AT REGULAR TIMES

Many farmers weigh the milk of each cow at every milking. This enables them to detect any gain or falling off in milk flow and to feed according to milk production. By the use of the milk scales, if the milking is done at the same time every day, the dairyman can readily determine which of his cows are responding to better feed and care. It is especially important that the milking should be at regular times on the day the tester is there and the day before he comes, because the total production for the monthly testing period is usually calculated entirely from the records made the day the tester is on the ground. There should be no temptation on the part of the farmer to inflate the records through irregular milking periods, because the primary purpose of cow-testing association work is to let the farmer himself know the true production and feed-cost records of his cows. Knowing these records he can select, breed, and feed intelligently.

COMMUNITY DEVELOPMENT

One of the most valuable advantages of organized cow testing is the development of the community. The farmers of some associations get together once a month to discuss the business of the association and to exchange ideas regarding better methods of dairying. Sometimes these meetings take the form of an automobile tour, a summer picnic, or a field day, and a definite program is carried out.

Make the program entertaining and inspirational as well as educational. It should be made so interesting and valuable that all who come this year will want to come next year. In discussing cow-testing association records, herds should be referred to by number rather than by name.

Placing some of the best cows on exhibition will add interest to the meeting. A judging demonstration or judging contest will generally appeal to most of the people present. An automobile trip to some of the best dairy farms of the community has been tried out and has proved to be valuable and profitable. This trip enables the farmers to see the best cows belonging to members of the association and to observe the methods of the best farmers in the community.

PRODUCTION AND INCOME

HOW THE INCOME CLIMBS

High-producing dairy cows are profitable cows. In a tabulation of more than 18,000 yearly records of cows in testing associations, where the income was from the sale of butterfat, the group of cows having an average yearly butterfat production of 100 pounds made an average income of \$10 over cost of feed. At 200 pounds of butterfat a year the income over cost of feed was \$42; at 300 pounds it was \$74; and at 400 pounds it was \$106. This does not mean that every cow that produces 400 pounds of butterfat a year will give an income over cost of feed of \$106, but it does mean that this is the relative advantage and that under normal conditions such a cow is many times more profitable than the one that produces only 100 pounds of butterfat.

This study covers the period 1910 to 1920, inclusive, and includes records from various parts of the United States. The feed cost and income figures vary for different years, for different prices, and for different geographical districts. For example, in the leading dairy districts, a cow that produces 100 pounds of butterfat a year does not ordinarily yield an income over cost of feed; yet in some of the less developed districts where feeds are cheaper such cows may return a small income above feed cost.

On an average, 1 cow in the 400-pound group produced more income over cost of feed than 10 cows in the 100-pound group. Most dairymen would rather take care of 1 good cow than 10 poor ones, yet in many of our dairy herds the 100-pound cows are much more numerous than the 400-pound cows. It is almost incomprehensible that any dairyman will continue to care for low-producing, unprofitable cows in his herd year after year when there are so many other and more worthy objects of charity.

As average butterfat production per cow increased, from group to group, the gain in income over cost of feed was very regular. As a rule, a gain of 50 pounds in production of butterfat per cow was accompanied by an increase of \$16 in income over cost of feed. The figures also showed that very few cow-testing association cows are fed beyond the point of economical production. The figures invariably showed that the highest-producing group was the most profitable group of dairy cows.

THE COST OF KEEPING SCRUBS

The average yearly butterfat production of all the dairy cows in this country has been estimated at about 170 pounds. The exact figures are unknown. Assuming that the average production is 170 pounds and that half the dairy cows are below average we bump up against the astounding fact that we are feeding good hay and grain and pasture to 12,000,000 low-producing dairy cows. It costs about \$600,000,000 to feed these cows and about \$600,000,000 more for labor and for overhead expenses. We go to all this trouble and expense, and our only tangible return is barns full of unprofitable dairy cows. If the cow-testing association eliminates the scrubs and establishes well-fed, well-bred, high-producing cows on every dairy farm it will have accomplished its chief purpose. Even then, however, its work will not all be done, because these higher standards must be maintained.



FIG. 14.—A high-producing group. But testing will show big differences in their records

POWER IN ACTION

To get anything out of cow-testing association work the dairyman must make use of the information obtained from a careful study of the records. If he does this, the records will be a gold mine of useful information to him. From his knowledge of the records of dams and daughters the dairyman can determine definitely what progress his herd is making due to breeding. From his knowledge of production and feed-cost records he can, without guesswork, eliminate all cows that do not yield a profit, and he can feed the remainder according to their known production. As the years pass he can eliminate all cows except those that yield large returns; and gradually, but certainly, he can build up a herd of high-producing, profitable dairy cows.

CONSTITUTION AND BY-LAWS FOR THE COOPERATIVE COW-TESTING ASSOCIATION

(As adopted by the cow-testing association committee of the American Dairy Science Association)

CONSTITUTION

ARTICLE I.—NAME

The name of this association shall be the ——— Cow-Testing Association.

ARTICLE II.—OBJECT

The object of this association shall be to provide means and methods for improving the dairy herds of members. This will be accomplished through the keeping of production, feed, and income records of each cow, on the basis of which unprofitable cows may be eliminated and feeding done more economically.

ARTICLE III.—PLACE OF BUSINESS

Its principal office and place of business shall be at ———.

ARTICLE IV.—MEMBERSHIP

This association shall be composed of dairymen or owners of dairy herds who agree to comply with the members' agreement, and who are acceptable to the board of directors.

ARTICLE V.—MEETINGS

This association shall meet annually for the election of a board of directors and for the transaction of other necessary business at such time and place as may be determined upon by the board of directors. All members shall be notified at least one week in advance of such meetings. Special meetings of the association may be called by the president or the board of directors, notices thereof at least two days in advance to be given to all the members of the association. Meetings of the board of directors shall be called by the secretary on the order of the president or three members of the board.

ARTICLE VI.—ORGANIZATION

The governing body of this association shall consist of a board of directors composed of five active members, who shall elect from their own number a president, vice president, secretary, and treasurer, whose duties shall be those usually devolving upon such officers. The first election of officers shall be held immediately after the election of the board of directors. All officers and directors shall hold office until their successors are elected. Vacancies occurring in the board of directors shall be filled by a majority vote of the remaining members of the board.

ARTICLE VII.—BUSINESS

Authority to conduct the business of the association shall be vested in the board of directors.

ARTICLE VIII.—ELECTION

Election of all officers and directors shall be by majority vote.

ARTICLE IX.—AMENDMENTS

This constitution may be amended by a two-thirds vote of the active members of the association present at any annual meeting.

BY-LAWS

ARTICLE I.—ORDER OF BUSINESS

1. Reading of minutes of previous meetings.
2. Reports of secretary and treasurer.
3. Reports of committees.
4. Unfinished business.
5. New business.
6. Election of officers.

ARTICLE II.—QUORUM

Three members of the board of directors shall constitute a quorum.

ARTICLE III.—AMENDMENTS

The by-laws may be amended by a two-thirds vote of the active members of the association present at any annual meeting.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

May 1, 1925

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This bulletin is a contribution from

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